Common Adult L.L Sport Injuries

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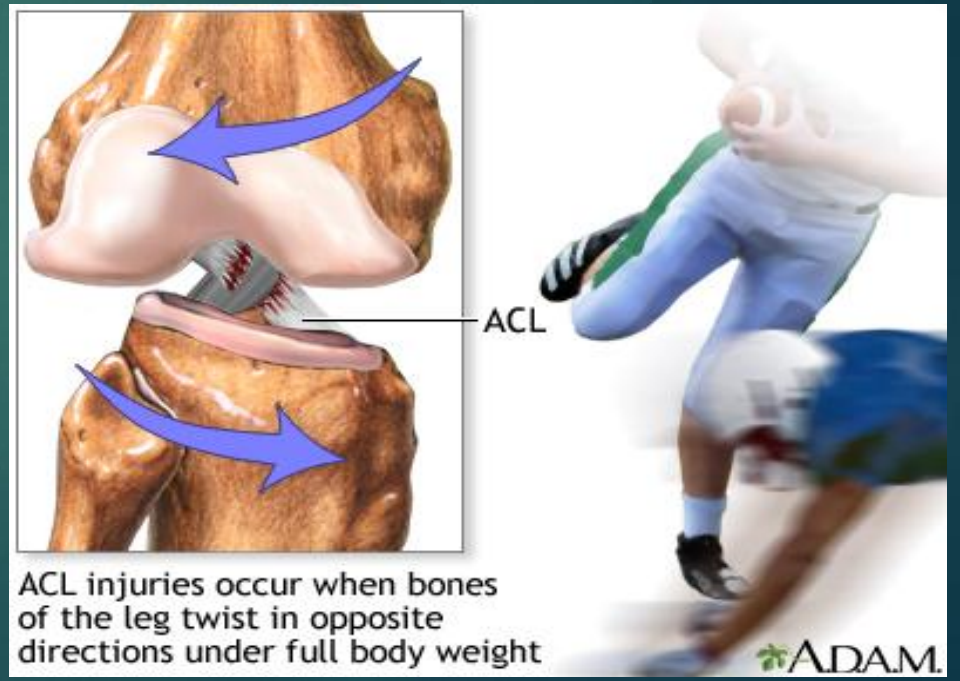


Objectives

- *Getting acquainted with common terms used for describing lower limb sport injuries*
- *How to diagnose the injury both Clinically & Radiologically*
- *Guide-lines for Management of L.L Sport Injuries*

Topics to be covered

- *KNEE INJURIES*
  - *Cruciate Ligaments (ACL & PCL)*
  - *Collateral ligaments (LCL & MCL)*
  - *Menisci (Medial & Lateral)*

- *ANKLE SPRAIN*

- *RUPTURED ACHILLES TENDON*

Terminology

- ***SPRAIN :-***

  Sudden joint twist causing painful soft tissue tension (Bruising)

- ***LIGAMENT TEAR :-***

  When more force is applied, the ligaments may be strained to the point of rupture

  * ***Partial Tear*** → ***Heals*** *spontaneously*

  * ***Complete Tear*** → *Healing is poor thus needs* ***Repair***

Knee injuries

*Common **Presentations** related to knee injuries*

- *Pain → Site*
- *Swelling → Effusion / Haemarthrosis*
- *Locking → Loose bodies*
- *Stiffness → Decreased / Painful ROM*
- *Deformity*
- *Giving way → Instability*
- *Limping*
- *Crepitus*

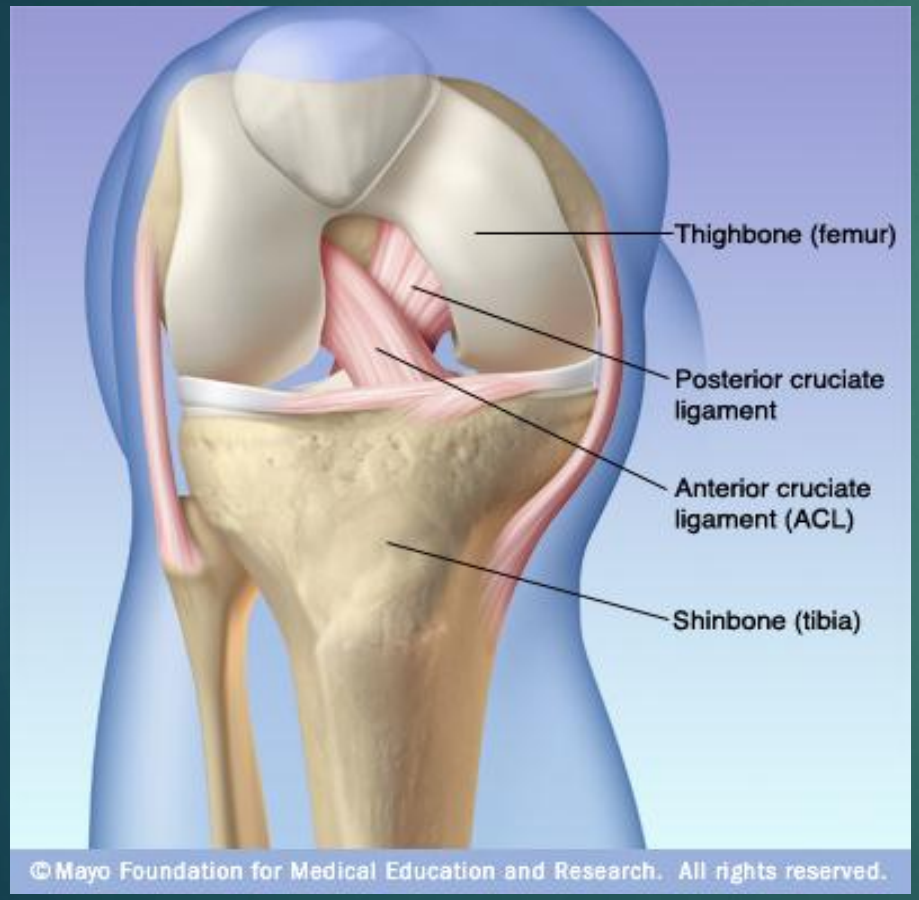
Knee injuries

CRUCIATE LIGAMENTS

(ACL & PCL)

- *Cruciate ligaments provide both anteroposterior & rotatory stability*
- *Help to resist* ***excessive*** *varus & valgus angulation*
- *Both have double band structure*
- *They are injured commonly in sports*
- *Seldom are they solitary, usually coupled to other injures eg, MM or MCL, etc*

ACL


Thighbone (femur)
Posterior cruciate ligament
Anterior cruciate ligament (ACL)
Shinbone (tibia)
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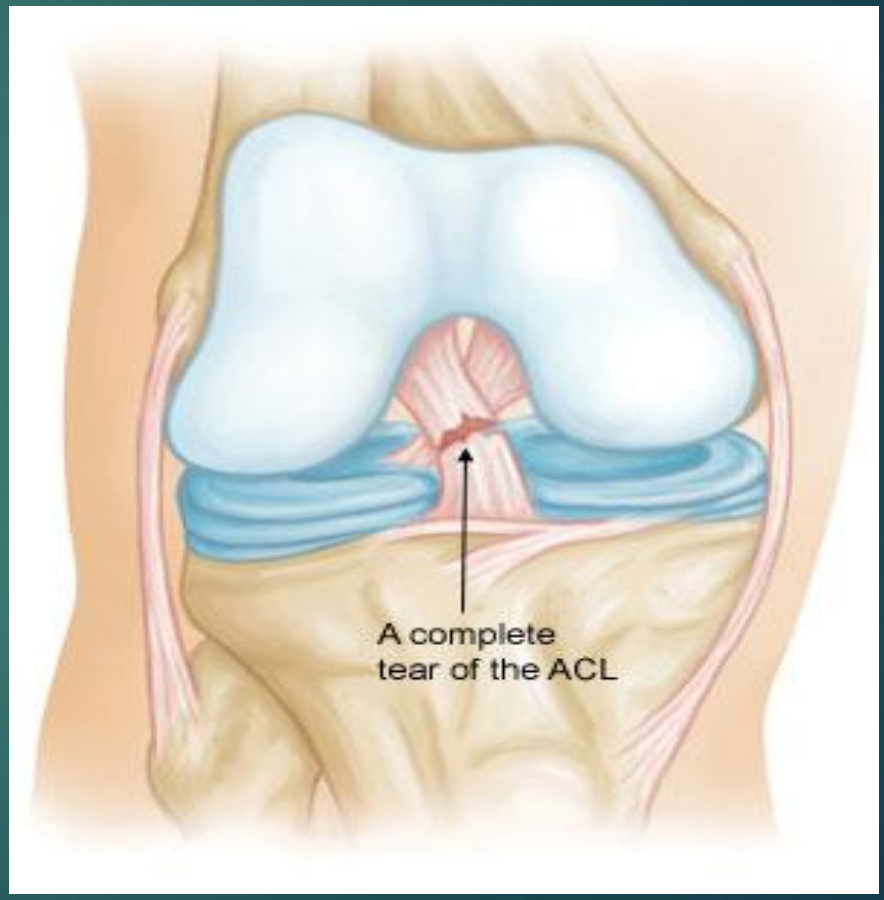

A complete tear of the ACL

Knee Injuries

Cruciate Ligaments →

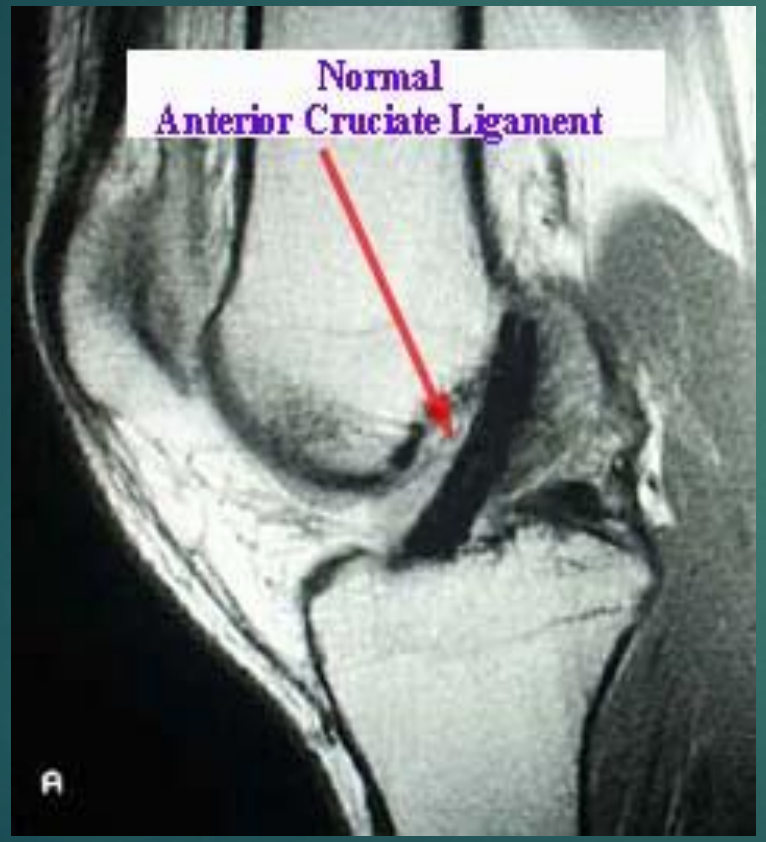
- *ACL resists anterior displacement of the tibia*
- *PCL resists posterior displacement of the tibia*
- *Both ACL & PCL injuries are diagnosed by clinical findings as well as imaging*
- *Sometimes proper evaluation needs to be done under GA*

Knee injuries

Clinical presentation *(ACL & PCL)*

- ***H/O*** *Trauma (twisting; pop)*
- ***C/O*** *Pain; Swelling (haemarthrosis)*
- ***O/E*** *Tenderness; Painful ROM; Instability (AP/ML)*
- *Partial tear is painful, but complete tear might not be painful & detected by instability*
- *N/V status evaluation !!!!*

MRI of ACL & PCL



ACL Injury

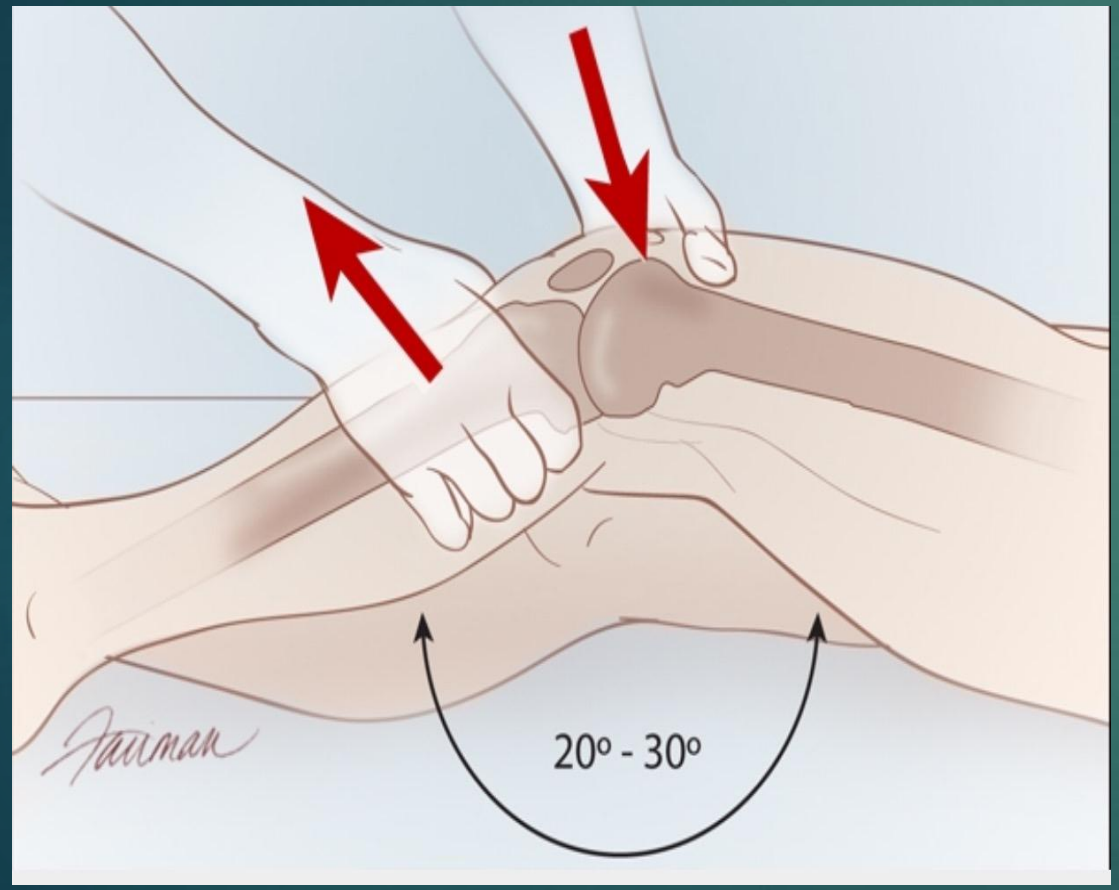
Knee Injuries

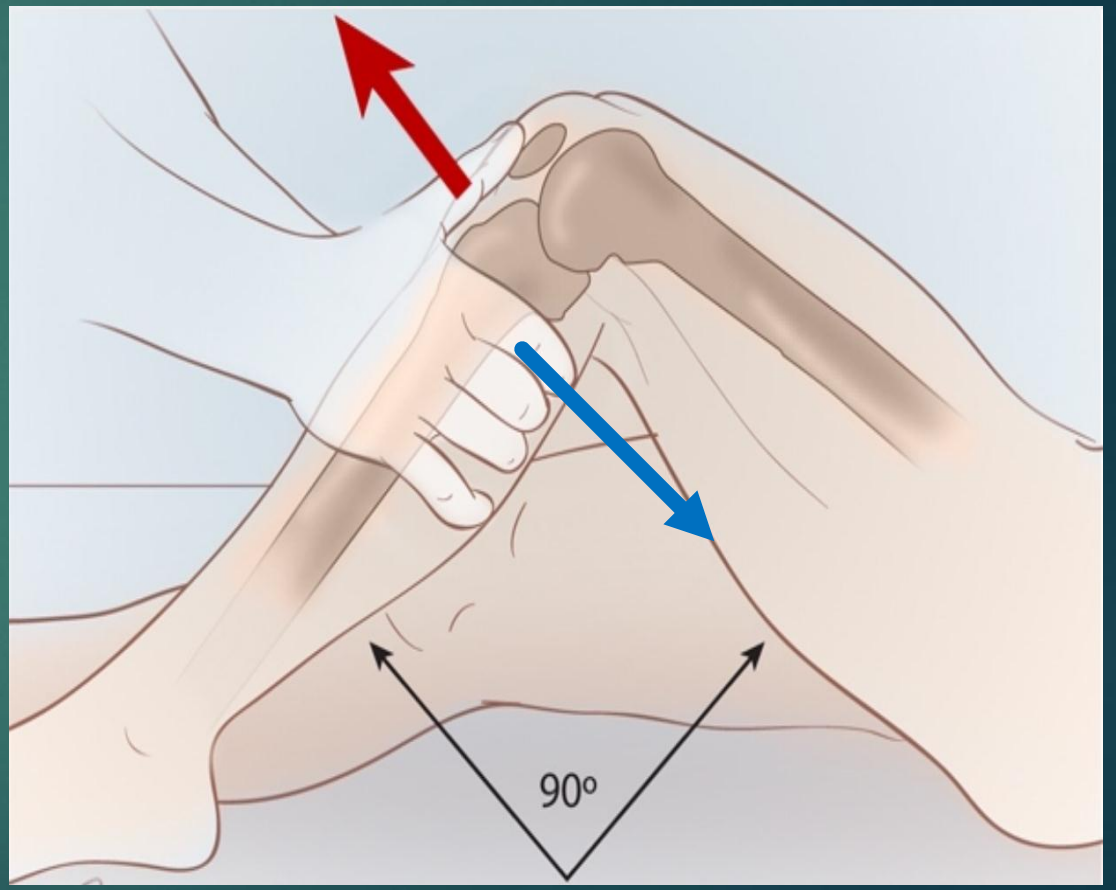
Clinical presentation *(ACL & PCL)* →

Specific tests *for evaluation of cruciate ligaments* →

- ***Anterior & Posterior Drawer Tests*** → *with the knee at 90* flexion test anteroposterior stability*
- ***Varus & Valgus Tests*** → *with the knee at 30* flexion test mediolateral stability*
- ***Lachman's Test*** → *Anteroposterior glide tested with the knee in 15- 20 degrees flexion*

Lachman Test / Drawer Test





Knee injuries

COLLATERAL LIGAMENTS *(MCL/ LCL)*

I. Medial collateral Ligament *(MCL) →*

- *Composed of superficial & deep components*
- *Depending on the position of the knee there are primary & secondary stabilizers*
- *At 30 * of flexion, the MCL is the primary stabilizer*
- *MCL & the thickened medial part of the capsule in addition to the tendon of semimembranosus muscle, RESIST VALGUS forces*

Knee Injuries

Clinical Presentation

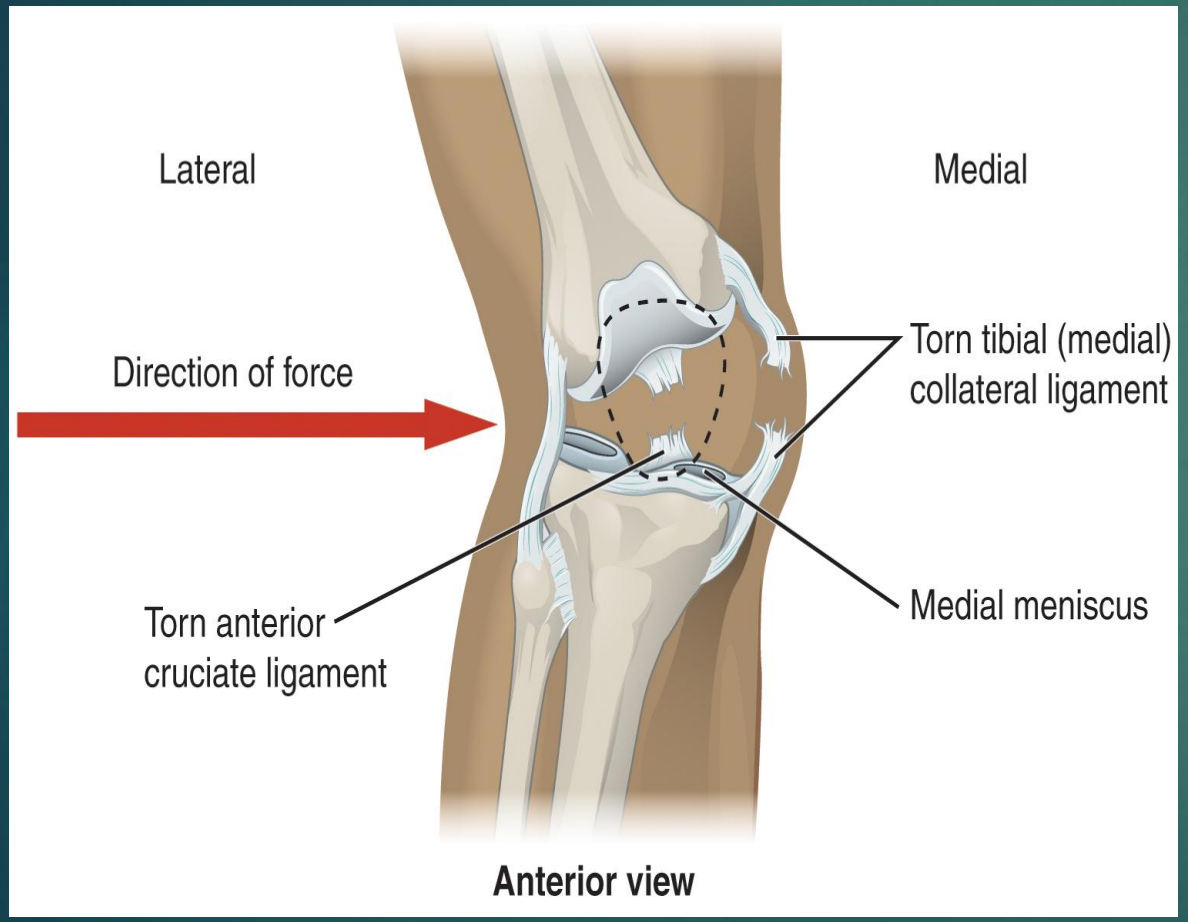
MCL

- *H/o :- Trauma*
- *C/O :- Pain +/- Swelling*
- *O/E :- Tenderness (MJL); Bruise*

  In case of complete rupture → +ve Valgus test

  In case of associated injuries → additional signs
- *XR :- Presence of **#** ; **Stress view** shows opening of medial joint line (MJL)*
- *MRI :- Diagnostic for bone & soft tissue details*

MCL Injury


Lateral
Medial
Direction of force
Torn tibial (medial) collateral ligament
Torn anterior cruciate ligament
Medial meniscus
Anterior view

Knee injuries

II. ***Lateral Collateral Ligament*** *(LCL)*

- *Together with the iliotibial band, LCL make the primary lateral stabilizers (between full extension & 30* flexion)*
- *Together with posterolateral complex (secondary stabilizers),* ***Resist Varus*** *stresses*
- ***Clinical presentation*** *is similar to MCL, but* ***Laterally****.*

Knee Injuries

IMAGING

- ***XR:-*** *Shows if there is avulsion #(femur, tibia, fibula)*
- ***Stress films:-*** *Show opening of the joint-line*
- ***MRI:-*** *Shows more detail of bone, menisci & ligaments*

NB, ***Arthroscopy*** *is* ***not*** *a diagnostic tool, & is contraindicated in acute injuries (capsule is torn)*

Knee Injuries

Treatment** of **Ligament Injuries

- *Conservative*
- *Arthroscopic Repair*
- *Open Repair*

Knee Injuries

Treatment** of **Ligament Injuries

- *Sprains & partial tears*
- *Complete tears*
- *Isolated Vs combined injuries*

Knee Injuries

Sprains & Partial Tears →

- ***Heal*** *spontaneously*
- *PRICE → Rest, Ice, Compression(or splint), Elevation, Protected weight-bearing (PWB)*
- *In case of hematoma or effusion →* ***Aspiration***
- *Sometimes intraarticular* ***L.A injection*** *for pain*
- ***Physiotherapy*** *to avoid stiffness or wasting*
- *Return to activity usually in 6 to 8 weeks*

Knee Injuries

Complete Tears – Isolated Injuries →

- ***MCL*** → *Long cast in extension 6/52. then exercises*
- ***LCL*** → *Usually associated with avulsed fibular head & needs repair, if not, treat as MCL*
- ***ACL*** → ***Repaired in professional athletes*** *or in case of tibial spine #, otherwise ,cast for 6/52 then exercise. If later on there is* ***instability****, then* ***ACL reconstruction***
- ***PCL*** → *Cast for 6/52 then exercise. In case of future residual* ***instability****, then* ***PCL reconstruction***

Knee Injuries

Combined Injuries →

- *These may result in **significant loss of function***
- *These injuries **need careful planning***
- ***ACL Reconstruction** is attempted as a **Delayed** procedure after dealing with the associated injury (eg, MCL)& rehabilitation in order to get best functional results*
- *PCL combined injuries also follows the same protocol except that all the posterolateral complex needs repair*

Knee Injuries

COMPLICATIONS →

- ***Adhesions*** → *Treated by* ***Physiotherapy***
- ***Instability*** *(giving way)* → *Deteriorates progressively & end up in secondary O.A*
- ***Secondary*** *(post-traumatic)* ***O.A***
- *Ossification (Pellegrini)* → *Not significant*

MENISCI (MM & LM)

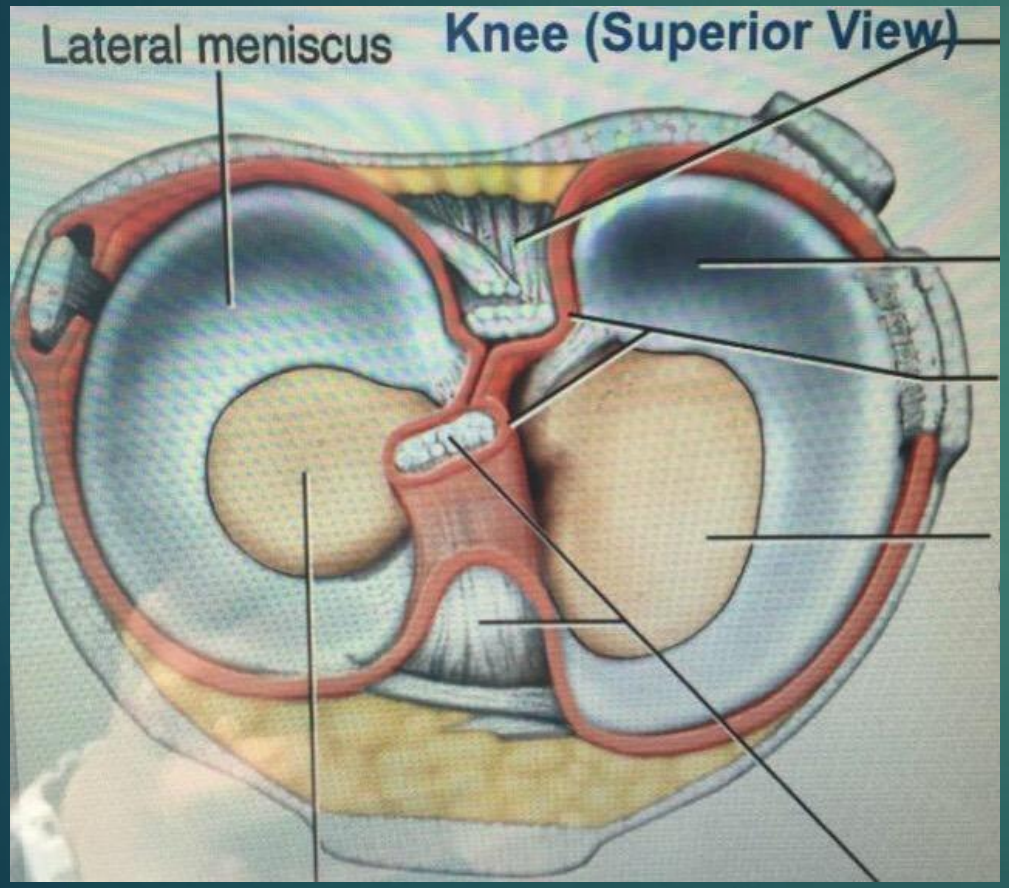
- *These are semilunar fibro-cartilage cushions that act as door-stoppers (stability), load-distributing (shock-absorbers) & provide additional contact surface & congruity*

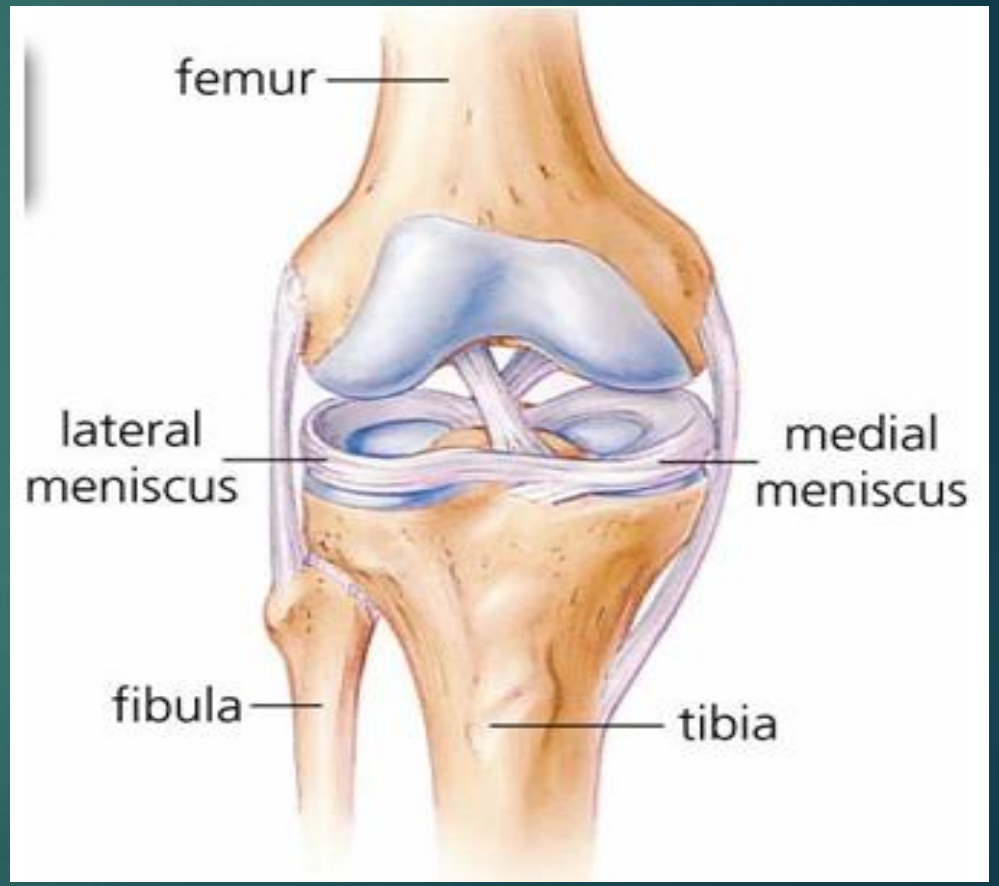
- ***Medial Meniscus*** *→ A wider C-shape; Less mobile; More susceptible to injury; Maybe associated with ACL injury; Lesions are usually vertical (bucket-handle); If detached can cause locking*

- ***Lateral Meniscus*** *→ Less commonly injured; Could be Discoid*

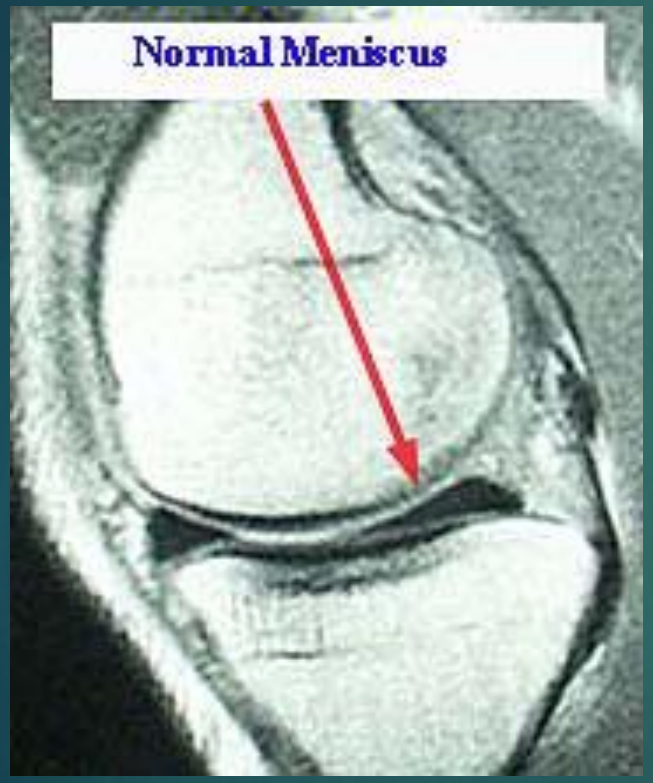
- *Menisci are mostly* ***avascula****r, so spontaneous healing is usually not expected.*

MENISCI (MM & LM)





Meniscal Injury



Meniscal injuries

Clinical presentation →

- ***H/O →*** *Trauma*
- ***C/O →*** *Pain; Swelling; Reduced ROM; Locking*
- ***O/E →*** *Swelling; Tenderness(Joint-Line);*

  +ve McMuray *(medial/lateral)*

  (+ve Lachman's in case of associated ACL injury)
- ***Imaging →*** *XR, MRI*

Meniscal Injuries

Treatment

→ *Conservative*

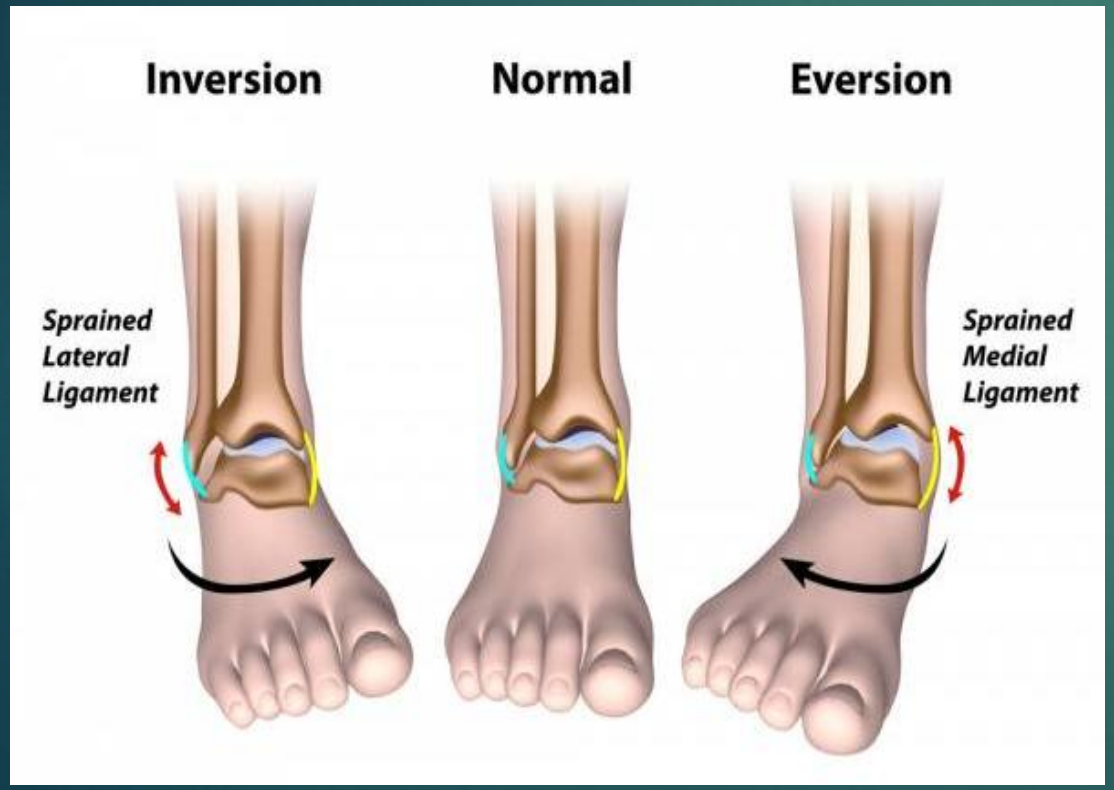
→ *Operative*

- *Slab & exercises + PWB for 3 to 4 weeks*
- *In case of **Locking**, unlock gently, if failed, then **arthroscopically** remove the fragment*
- *If **symptoms** are recurrent or **disabling**, then surgery is indicated whether open or arthroscopic*
- *Injured meniscus is either sutured or excised (partial meniscectomy)*

Ankle Sprain

- *Ankle sprains are the **commonest** of all sports-related injuries (>25%)*
- *The **lateral ligament** complex is injured in **>75%** of cases **(ATFL, CFL)***
- *Medial ligament (Deltoid) injuries are associated with a # or joint injury*
- *Pattern of injury being*
  - → *Inversion/ Eversion*
  - → *Plantar flexion/ Dorsiflexion*

Ankle Sprain



Ankle sprain

- *Commonly known as " **Twisted ankle**"*
- *Due to unbalanced loading with the ankle inverted & plantarflexed*
- ***Ligaments** injured are mostly **ATF & CF**, but depending on severity, other ligaments could be injured too (capsule)*
- *Sometimes avulsion **#**s occur eg, tip of malleolus or base of 5th metatarsal bone*
- *Bleeding into soft tissues causes **Hematoma** & **Bruising***

Ankle sprain

Clinical presentation

H/O → *Twisting injury*

C/O → *Pain; Swelling; Inability to bear weight*

O/E → *Swelling; Bruising; Tenderness; Painful ROM; N/V status*

Also → *Look for possible associated proximal lesions*

(Findings depend on the severity of the injury)

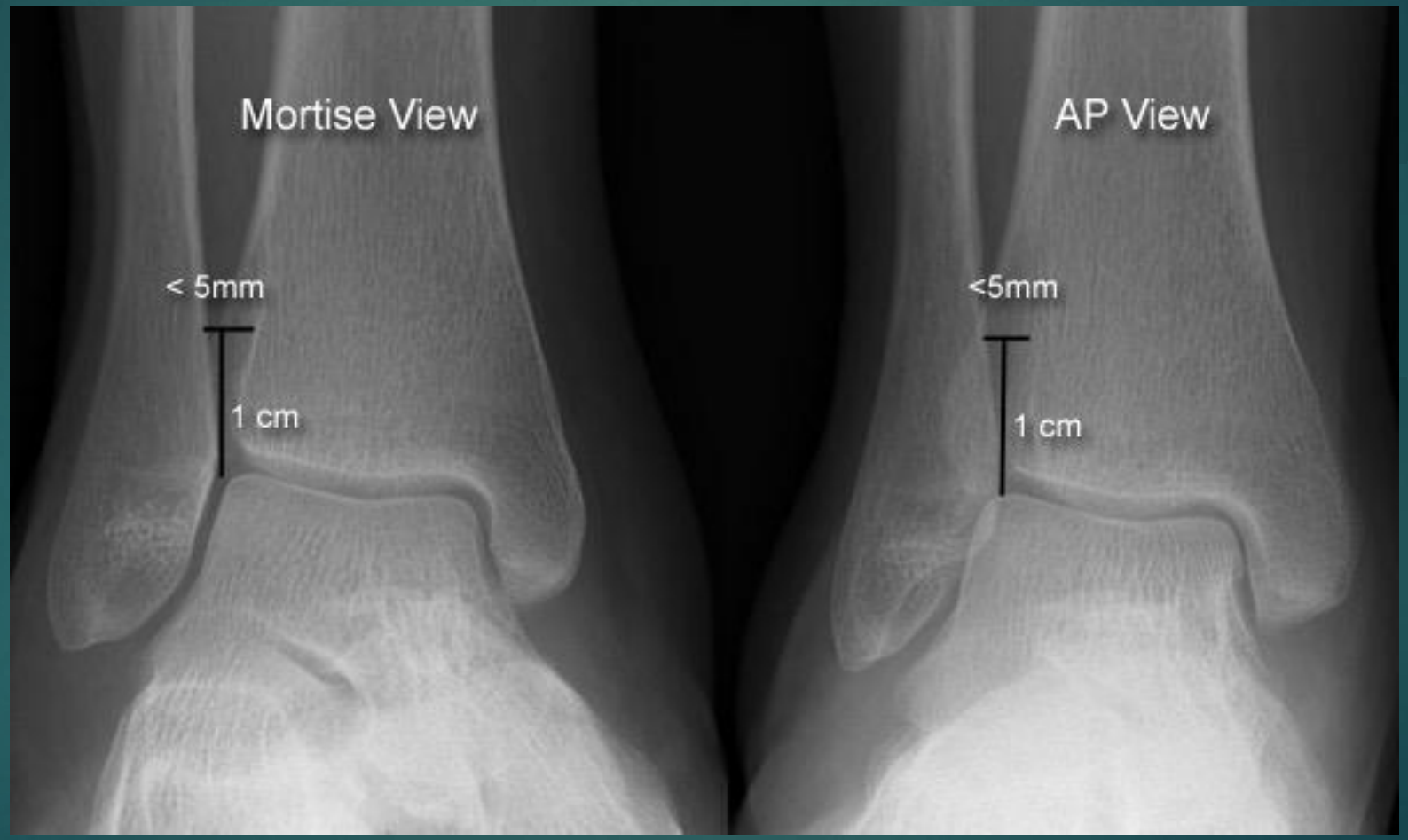
Ankle sprain

Imaging →

- ***X/R** views to be requested are:-*

  AP; Lateral; Mortise
- *To confirm or R/O Fractures*
- ***Syndesmotic** injury is evaluated by the **mortise view***
- *Additional XRs are to be done for evaluation of the foot & knee*
- *Symptomatic injuries of > 6/52 duration are to be further evaluated by **CT** or **MRI***

Ankle XR → AP & Mortise



Ankle sprain

TREATMENT →

- ***Initial →*** *PRICE*

R*est,* ***I****ce,* ***C****ompressions,* ***E****levation &* ***P****rotection (crutches for PWB or NWB)*

NSAIDS (oral, injectable or topical)

- ***Conservative →***

All the above with addition of a splint or cast for immobilization

For 1/52 to 3/52 or more depending on severity of the injury

- ***Operative →***

In case of persistent symptomatology, eg, Instability, Swelling, Pain, etc , for ***>12/52*** *after injury*

Achilles Tendon Injury

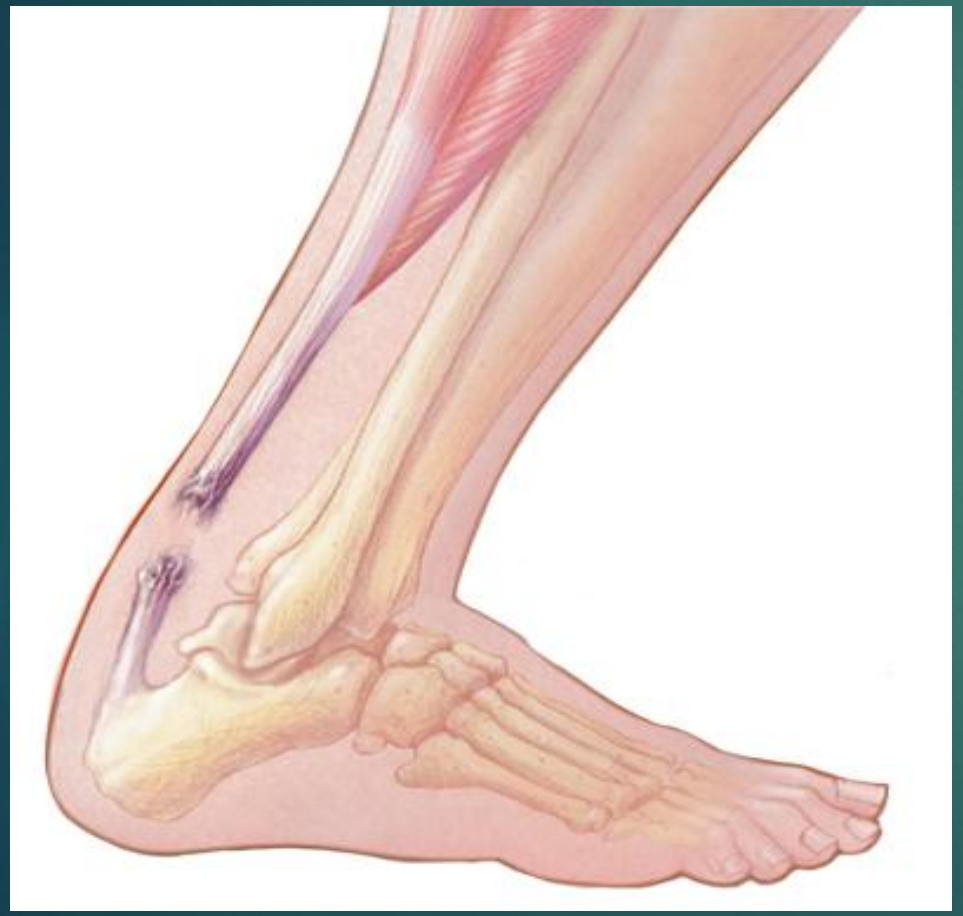
- *This could be **closed** or **open** injury*
- *If closed, a pop snap is felt or even heard at the back of the heel*
- *Occurs in sports like squash or football, etc*
- *Pain & collapse is sudden*
- *Typical site of rupture is about 4 cm from insertion at calcaneum*
- *Sometimes there is an underlying pathology like tendinitis or previous injection*

Achilles Tendon Injury

O/E →

- *In case of open injury, there will be a **Lacerated Wound***
- *Palpable **Gap** at the site of rupture*
- *Bruising (usually appears next day)*
- *Patient is **unable to walk** properly*
- *Calf squeezing test is **+ve** (**Thompson** or Simmond's)*

Achilles Tendon



Achilles Tendon Injury

Treatment →

- *Surgical **Repair** of the tendon*
- *Protection with a cast for 6/52*
- *NWB mobilization*
- *Physiotherapy → Ankle ROM & calf muscle strengthening exercises + FWB + protective Boots*
- *Full return to activity up to 6 months*
- *Complications include wound infection & Re-rupture*

Conclusions

- *Sport injuries are a **common** & important issue for different age groups*
- *Sport injuries are evaluated both **Clinically** & **Radiologically***
- *Injury **severity** influences **ttt** modality & duration before **Return to Activity***
- ***Mild** injuries are treated **Conservatively** by " PRICE" & NSAIDS*
- ***Severe** injuries are treated **Surgically** either **Open** or **Arthroscopically***
- ***Rehabilitation** is an **integral** part of **ttt***